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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,073	12/31/2003	Shen-Kan Hsiung	003-03-033	1871

35870 7590 02/24/2005

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EXAMINER

RAO, SHRINIVAS H

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/750,073		HSIUNG ET AL.	
	Examiner		Art Unit	
	Steven H. Rao		2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

The Application as currently filed does not claim priority from any previously filed Application. Therefore, currently the earliest available filing date is the U.S. filing date namely December 31, 2003.

Information Disclosure Statement

Acknowledgment is made of receipt of Applicant's Information Disclosure Statement (PTO-1449) filed on 12/31/2003.

The references submitted on 12/31/2003 are acknowledged. All the cited references have been considered.

Presently the single sheet of 1449 submitted does not list any references thereon. Therefore an initialed 1449 can be enclosed herewith.

It is suggested that Applicants' include a 1449 listing the references submitted with the IDS of 12/31/2003 thereon , which will be initialed and mailed with the next Office Action.

However the foreign patents and documents (in languages other than English and without a translation) cited by applicant are considered to the extent that could be understood from the abstract and drawings.

Claim Objections

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Claims 1-8 are objected to under 35 U.S.C. 112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1 the phrase "fabricating said readout circuit device of said array pH sensor according to the typical process for making semiconductors" renders the claim indefinite because the term "typical process" is characterized according to applicant's own definition (e.g. specification page 9 lines 14-15) merely means " conventional" or "well known" process ; if applicant desires to patent detailed controls over the process they should be affirmatively recited in the claim; if all that asserted as invention is hybrid pH sensor as such,. It is suggested that applicants use either of the terms ' conventional " or "well known " instead of "typical. "

Claims 2-8 are objected to for directly/indirectly depending upon objected to claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1-8 rejected under 35 U.S.C. 103(a) as being unpatentable over Hsiung et al. (U.S Patent No. 6,236,075 , herein after Hsiung) in view of Kinlen et al. (U.S. Patent No. 5,110,441, herein after Kinlen).

With respect to claim 1 Hsiung describes a method for fabricating an array pH sensor and a readout circuit device of said array PH sensor, comprising: depositing a non-conductive PH sensing film onto an non-insulated substrate, (Hsiung figure 2G#25, col. 3 lines 38-40 and claim 8) thereby fabricating a separate array PH sensor and detecting the PH value of the solution by using said array PH sensor; (Hsiung figure 4, col. 3 lines 54 to 62).

Hsiung does not specifically describe fabricating a readout circuit device of said array PH sensor according to the typical processes for making semiconductors.

However, Kinlen, a patent from the same field of endeavor describes in figures 26, 27 etc. describe fabricating a readout circuit device of said array PH sensor according to the typical processes for making semiconductors to provide acceptable drift of electrode potential and dramatically improve performance of the system and provide an electrode with constant Nernstian response.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Kinlen's readout circuit device in Husing's method , the motivation to make the above combination is to provide acceptable drift of electrode potential and dramatically improve performance of the system and provide an electrode with constant Nernstian response. (Kinlen col 21 lines 43 to 51).

The remaining limitations of claim 1 :

and combining said array pH sensor and said readout circuit device as a hybrid array pH sensor. (Kinlen figure 26, col. 30 line 59 to col. 31 col. 32 line 14).

With respect to claim 2 Hsiung describes for fabricating an array PH sensor and a readout circuit device of said array pH sensor according to claim 1, wherein said array PH sensor is fabricated by the following steps: Step 1: providing a substrate; (Hsiung figure 2a # 20) Step 2: growing an A1 film by using a metallic mask and a vacuum evaporation machine;(Hsiung figure 2 E col. 3 lines 23 to 25, Hsiung col. 14 line 66) Step 3: growing a SnO₂ film by using a metallic mask and a sputter machine; (Hsiung figure 2G, col. 3 lines line 31 , 38-40) and Step 4: encapsulating the resulting product with epoxy resin. (Husing Figure 2 H , col. 3 lines 41 to 46).

With respect to claim 3 Hsiung describes the method for fabricating an array PH sensor and a readout circuit device of said array pH sensor according to claim 1, wherein said array pH sensor has a tin dioxide/metal silicon dioxide multi-layer structure or a tin dioxide/indium tin oxide/glass multi-layer structure. (Hsiung figure 2 H, layers 21 ,25, etc., Abstract last two lines from bottom, col. 2 lines 5-7)

With respect to claim 4 Hsiung describes the method for fabricating an array PH sensor and a readout circuit device of said array PH sensor according to claim 1, wherein said array PH sensor comprises a pre-readout circuit, (Kinlen figure 26 the circuit formed by 402,to 408) a multiplexer, a rear end buffer circuit (Kinlein fig. 26 , #408, digital controller buffers the input current and then converts the current) and an amplifier circuit. (Kinlen fig. 26 #404).

With respect to claim 5 Hsiung describes the method for fabricating an array pH sensor and a readout circuit device of said array pH sensor according to claim 2, wherein said substrate is selected from a glass substrate, a silicon substrate, a ceramic substrate or a polymeric substrate. (Hsiung line 64-silicon, Kinlen col. 20 ex. 1 – ceramic ,glass ,etc.)

With respect to claims 6 and 7 Hsiung describes the method for fabricating an array pH sensor and a readout circuit device of said array PH sensor according to claim 3, wherein said tin dioxide/metal/silicon dioxide structure is formed by depositing an aluminum layer and a tin dioxide layer onto said substrate, and encapsulating the resulting structure with epoxy resin to form a opening channel,(see above rejections) wherein a conducting line is led out via said aluminum layer. (Hsiung figure 2E , etc. # 24 a-aluminum plugs , col 3 line 26).

With respect to claim 8 Hsiung describes the method for fabricating an array pH sensor and a readout circuit device of said array PH sensor according to claim 4, wherein said readout circuit device of said array PH sensor receives different signals (Hsiung figure 26 404-408 all receive different signals) and amplifies these signals for determination (Hsiung fig. 26 404) such that when the multiplexer is modified, (Hsiung fig. 26 # 406 , col. 31 lines 10-25) a variety of array sensors can be fabricated (Kinlen col. 1 line 17, etc.) and said array sensor can be applied for fabrication of potentiometric sensor.

The recitation “ said array sensor can be applied for fabrication of photiometric sensor is taken to be an intended use recitation and does not differentiate the apparatus

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obtained by recited method from the apparatus obtained by the prior art method satisfying the claimed structural limitations. Ex parte Masham 2 USPQ 2d 1647 (!987) .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is (571) 272-1718 can normally be reached on 8.00 to 5.00.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Steven H. Rao

Patent Examiner

Feb. 19, 2005.